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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,977	11/30/2000	Won-Sung Choi	YPL-0014	2126

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EXAMINER
KACKAR, RAM N

ART UNIT	PAPER NUMBER
1763	7

DATE MAILED: 09/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/726,977	Applicant(s) CHOI, WON-SUNG
	Examiner Ram N Kackar	Art Unit 1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 August 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims1, 12-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie (US Patent 5928428) in view of Tanaka (US Patent 5091207). Horie discloses a thin film deposition apparatus comprising, a reactor (Fig 1-1) a heater (Fig 1-2) capable of heating the chamber at least to 700 degrees C, inert gas and reaction gas supply portion wherein the reaction gas or the inert gas could be selected (Fig 1-5a and 5b), an exhaust pump (Fig 1-9) and Ozone gas supply (Fig 1-5c). Horie does not disclose a selection transfer member for selecting transfer of ozone to either reaction chamber or exhaust pump. Tanaka discloses selection valves to switch main gas to reactor or exhaust pump (Fig 7 413/414 or 424/425). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to provide for switching the Ozone line either to reactor for normal use or to exhaust pump for purging the line for cleaning purposes.

In claim 1 the limitation of controlling the reaction or ozone gas to deposit a thin film by controlling flow, in claim 14 the inert gas to be argon and in claim 16 inflow of the inert gas are directed to intended use and do not structurally distinguish over Horie.

3. Claims 2, 3, 5, 10, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie (US Patent 5928428) in view of Tanaka (US Patent 5091207) as applied to claim 1

and further in view of Nozawa et al (US Patent 5290381). Horie discloses an ozone generator (Fig 1-12) main valve to control Ozone (Fig 1-5c), a transfer unit valve to allow the Ozone to pass through to the reactor (Fig 1 valve left to the top heater) and an additional transfer unit valve (Fig 1 valve right to the top heater). These two valves could provide process and thermal treatment Ozone transfer units. Horie does not disclose an Ozone control unit to allow a certain amount of Ozone to flow to Ozone transfer unit by removing an excessive amount of ozone generated. Nozawa et al disclose a gas control unit comprising an automatic pressure valve which can allow a limited part of gas from a source to flow to a reactor in case of higher pressure at the source (Fig 3-74,75 and Col 6 28-45) while removing excess Ozone. There fore it would have been obvious to one having ordinary skill in the art at the time invention was made to connect the automatic pressure valve between main valve and the Ozone generator so as to remove excess Ozone and send to Ozone remover, reduce pressure up stream of transfer units within predetermined limits and allow only predetermined amount of Ozone to the reactor.

Regarding claim 5 as discussed in claim 1, Tanaka discloses selection valves to switch main gas to reactor or exhaust pump using two valves (Fig 7 413/414 or 424/425). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to provide for switching the Ozone line either to reactor for normal use or to exhaust pump for purging the line for cleaning purposes.

In claim 15 the limitation of flow rates of ozone is directed to intended use and do not structurally distinguish over Horie.

4. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie (US Patent 5928428) in view of Tanaka (US Patent 5091207) and further in view of Nozawa et al (US Patent 5290381) as applied to claim 3 and further in view of Limb et al (US Patent 5352615). Horie discloses single valve Ozone transfer units for process transfer and thermal transfer unit but does not disclose a mass flow controller and an other valve in sequence for each. Limb et al disclose a valve and an MFC in sequence in configuration similar to the one cited in the claim, one for process transfer (See 311) and the other for thermal treatment transfer unit (See 312). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to replace the single valve transfer units with the configuration of Limb et al so as to be able to control Ozone flow accurately and provide isolation between the two gas lines. Claims 8 and 9 are for intended use and provide no structural distinction over Limb et al. Mass flow controllers of the claimed range are well known in the arts.

Response to Amendment

Applicants arguments filed on 8/29/2002 have been considered but not found to be persuasive. Applicant's amendment to claim 1 reciting "a gas supply portion and an ozone supply portion for supplying reaction gas and ozone, respectively, such that a thin film is deposited on a wafer at a thickness of an atomic layer by varying inflow duration of the reaction gas or the ozone" does not render this claim patentable, because this limitation is directed to an intended use only and does not provide any structural limitation over prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK
September 2, 2002

GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700